

Claims

What is claimed is:

1. An apparatus for forming a wellbore casing in a borehole located in a subterranean formation including a preexisting wellbore casing, comprising:
a support member including a first fluid passage;
an expansion cone coupled to the support member including a second fluid passage fluidically coupled to the first fluid passage;
an expandable tubular liner movably coupled to the expansion cone; and
an expandable shoe that defines an interior region for containing fluidic materials coupled to the expandable tubular liner.
2. The apparatus of claim 1, wherein the expansion cone is expandable.
3. The apparatus of claim 1, wherein the expandable shoe includes a valveable fluid passage for controlling the flow of fluidic materials out of the expandable shoe.
4. The apparatus of claim 1, wherein the expandable shoe includes:
an expandable portion; and
a remaining portion coupled to the expandable portion;
wherein the outer circumference of the expandable portion is greater than the outer circumference of the remaining portion.
5. The apparatus of claim 4, wherein the expandable portion includes:
one or more inward folds.
6. The apparatus of claim 4, wherein the expandable portion includes:
one or more corrugations.
7. The apparatus of claim 1, wherein the expandable shoe includes:
one or more inward folds.
8. The apparatus of claim 1, wherein the expandable shoe includes:

one or more corrugations.

9. A shoe, comprising:
 - an upper annular portion;
 - an intermediate annular portion coupled to the upper annular portion; and
 - a lower annular portion coupled to the intermediate portion;wherein the intermediate annular portion has an outer circumference that is larger than the outer circumferences of the upper and lower annular portions.
10. The shoe of claim 9, wherein the lower annular portion includes a valveable fluid passage for controlling the flow of fluidic materials out of the shoe.
11. The shoe of claim 9, wherein the intermediate portion includes:
 - one or more inward folds.
12. The shoe of claim 9, wherein the intermediate portion includes:
 - one or more corrugations.
13. A method of forming a wellbore casing in a subterranean formation having a preexisting wellbore casing positioned in a borehole, comprising:
 - installing a tubular liner, an expansion cone, and a shoe that defines an interior region for containing fluidic materials in the borehole;
 - radially expanding at least a portion of the shoe by injecting a fluidic material into the interior region of the shoe; and
 - radially expanding at least a portion of the tubular liner by injecting a fluidic material into the borehole below the expansion cone.
14. The method of claim 13, further comprising:
 - radially expanding the expansion cone.
15. The method of claim 13, further comprising:

lowering the expansion cone into the radially expanded portion of the shoe;
and
radially expanding the expansion cone.

16. The method of claim 15, further comprising:
radially expanding at least a portion of the shoe and the tubular liner by
injecting a fluidic material into the borehole below the radially expanded
expansion cone.
17. The method of claim 13, further comprising:
radially expanding at least a portion of the preexisting wellbore casing.
18. The method of claim 17, further comprising:
overlapping a portion of the radially expanded tubular liner with a portion of
the preexisting wellbore casing.
19. The method of claim 18, wherein the inside diameter of the radially expanded
tubular liner is substantially equal to or greater than the inside diameter of a
nonoverlapping portion of the preexisting wellbore casing.
20. The method of claim 17, further comprising:
applying an axial force to the expansion cone.
21. The method of claim 13, wherein the inside diameter of the radially expanded
shoe is greater than or substantially equal to the inside diameter of the radially
expanded tubular liner.
22. A method of forming a tubular structure in a subterranean formation having a
preexisting tubular member positioned in a borehole, comprising:
installing a tubular liner, an expansion cone, and a shoe that defines an
interior region for containing fluidic materials in the borehole;
radially expanding at least a portion of the shoe by injecting a fluidic material
into the interior region of the shoe; and

radially expanding at least a portion of the tubular liner by injecting a fluidic material into the borehole below the expansion cone.

23. The method of claim 22, further comprising:
radially expanding the expansion cone.
24. The method of claim 22, further comprising:
lowering the expansion cone into the radially expanded portion of the shoe;
and
radially expanding the expansion cone.
25. The method of claim 24, further comprising:
radially expanding at least a portion of the shoe and the tubular liner by
injecting a fluidic material into the borehole below the radially expanded
expansion cone.
26. The method of claim 22, further comprising:
radially expanding at least a portion of the preexisting tubular member.
27. The method of claim 26, further comprising:
overlapping a portion of the radially expanded tubular liner with a portion of
the preexisting tubular member to provide a load bearing interface and
a fluidic seal.
28. The method of claim 27, wherein the inside diameter of the radially expanded
tubular liner is substantially equal to the inside diameter of a nonoverlapping portion
of the preexisting tubular member.
29. The method of claim 26, further comprising:
applying an axial force to the expansion cone.

30. The method of claim 22, wherein the inside diameter of the radially expanded shoe is greater than or substantially equal to the inside diameter of the radially expanded tubular liner.
31. An apparatus for forming a wellbore casing in a borehole located in a subterranean formation including a preexisting wellbore casing, comprising:
a support member including a first fluid passage;
an expandable expansion cone coupled to the support member including a second fluid passage fluidically coupled to the first fluid passage;
an expandable tubular liner movably coupled to the expansion cone; and
an expandable shoe that defines an interior region for containing fluidic materials coupled to the expandable tubular liner comprising:
a valveable fluid passage for controlling the flow of fluidic materials out of the expandable shoe;
an expandable portion including one or more inward folds; and
a remaining portion coupled to the expandable portion;
wherein the outer circumference of the expandable portion is greater than the outer circumference of the remaining portion.
32. A shoe, comprising:
an upper annular portion;
an intermediate annular portion coupled to the upper annular portion including one or more inward folds; and
a lower annular portion coupled to the intermediate portion including a valveable fluid passage for controlling the flow of fluidic materials out of the shoe;
wherein the intermediate annular portion has an outer circumference that is larger than the outer circumferences of the upper and lower annular portions.
33. A method of forming a wellbore casing in a subterranean formation having a preexisting wellbore casing positioned in a borehole, comprising:
installing a tubular liner, an expansion cone, and a shoe in the borehole;

radially expanding at least a portion of the shoe by injecting a fluidic material into the shoe;
 lowering the expansion cone into the radially expanded portion of the shoe;
 radially expanding the expansion cone;
 radially expanding at least a portion of the tubular liner by injecting a fluidic material into the borehole below the expansion cone; and
 overlapping a portion of the radially expanded tubular liner with a portion of the preexisting wellbore casing;
 wherein the inside diameter of the radially expanded shoe is greater than or equal to the inside diameter of the radially expanded tubular liner; and
 wherein the inside diameter of the radially expanded tubular liner is equal to or greater than the inside diameter of a nonoverlapping portion of the preexisting wellbore casing.

34. A method of forming a tubular structure in a subterranean formation having a preexisting tubular member positioned in a borehole, comprising:
- installing a tubular liner, an expansion cone, and a shoe in the borehole;
 - radially expanding at least a portion of the shoe by injecting a fluidic material into the shoe;
 - lowering the expansion cone into the radially expanded portion of the shoe;
 - radially expanding the expansion cone;
 - radially expanding at least a portion of the tubular liner by injecting a fluidic material into the borehole below the radially expanded expansion cone;
 - and
 - overlapping a portion of the radially expanded tubular liner with a portion of the preexisting tubular member to provide a load bearing interface and a fluidic seal;
 - wherein the inside diameter of the radially expanded shoe is greater than or equal to the inside diameter of the radially expanded tubular liner; and
 - wherein the inside diameter of the radially expanded tubular liner is equal to the inside diameter of a nonoverlapping portion of the preexisting tubular member.

35. An apparatus for forming a wellbore casing in a borehole located in a subterranean formation including a preexisting wellbore casing, comprising:
- a support member;
 - an expansion device coupled to the support member;
 - an expandable tubular liner movably coupled to the expansion device; and
 - an expandable shoe that defines an interior region for containing fluidic materials coupled to the expandable tubular liner.
36. A method of forming a wellbore casing in a subterranean formation having a preexisting wellbore casing positioned in a borehole, comprising:
- installing a tubular liner, an expansion device, and a shoe that defines an interior region for containing fluidic materials in the borehole;
 - radially expanding at least a portion of the shoe by injecting a fluidic material into the interior region of the shoe; and
 - radially expanding at least a portion of the tubular liner using the expansion device.
37. A method of forming a tubular structure in a subterranean formation having a preexisting tubular member positioned in a borehole, comprising:
- installing a tubular liner, an expansion device, and a shoe that defines an interior region for containing fluidic materials in the borehole;
 - radially expanding at least a portion of the shoe by injecting a fluidic material into the interior region of the shoe; and
 - radially expanding at least a portion of the tubular liner using the expansion device.
38. A method of forming a wellbore casing in a subterranean formation having a preexisting wellbore casing positioned in a borehole, comprising:
- installing a tubular liner, an expansion device, and a shoe in the borehole;
 - radially expanding at least a portion of the shoe by injecting a fluidic material into the shoe;
 - lowering the expansion device into the radially expanded portion of the shoe;
 - radially expanding the expansion device;

radially expanding at least a portion of the tubular liner by injecting a fluidic material into the borehole below the expansion device; and overlapping a portion of the radially expanded tubular liner with a portion of the preexisting wellbore casing; wherein the inside diameter of the radially expanded shoe is greater than or equal to the inside diameter of the radially expanded tubular liner; and wherein the inside diameter of the radially expanded tubular liner is equal to or greater than the inside diameter of a nonoverlapping portion of the preexisting wellbore casing.

39. A method of forming a tubular structure in a subterranean formation having a preexisting tubular member positioned in a borehole, comprising:

installing a tubular liner, an expansion device, and a shoe in the borehole; radially expanding at least a portion of the shoe by injecting a fluidic material into the shoe;

lowering the expansion device into the radially expanded portion of the shoe; radially expanding the expansion device;

radially expanding at least a portion of the tubular liner by injecting a fluidic material into the borehole below the radially expanded expansion device; and

overlapping a portion of the radially expanded tubular liner with a portion of the preexisting tubular member to provide a load bearing interface and a fluidic seal;

wherein the inside diameter of the radially expanded shoe is greater than or equal to the inside diameter of the radially expanded tubular liner; and wherein the inside diameter of the radially expanded tubular liner is equal to the inside diameter of a nonoverlapping portion of the preexisting tubular member.